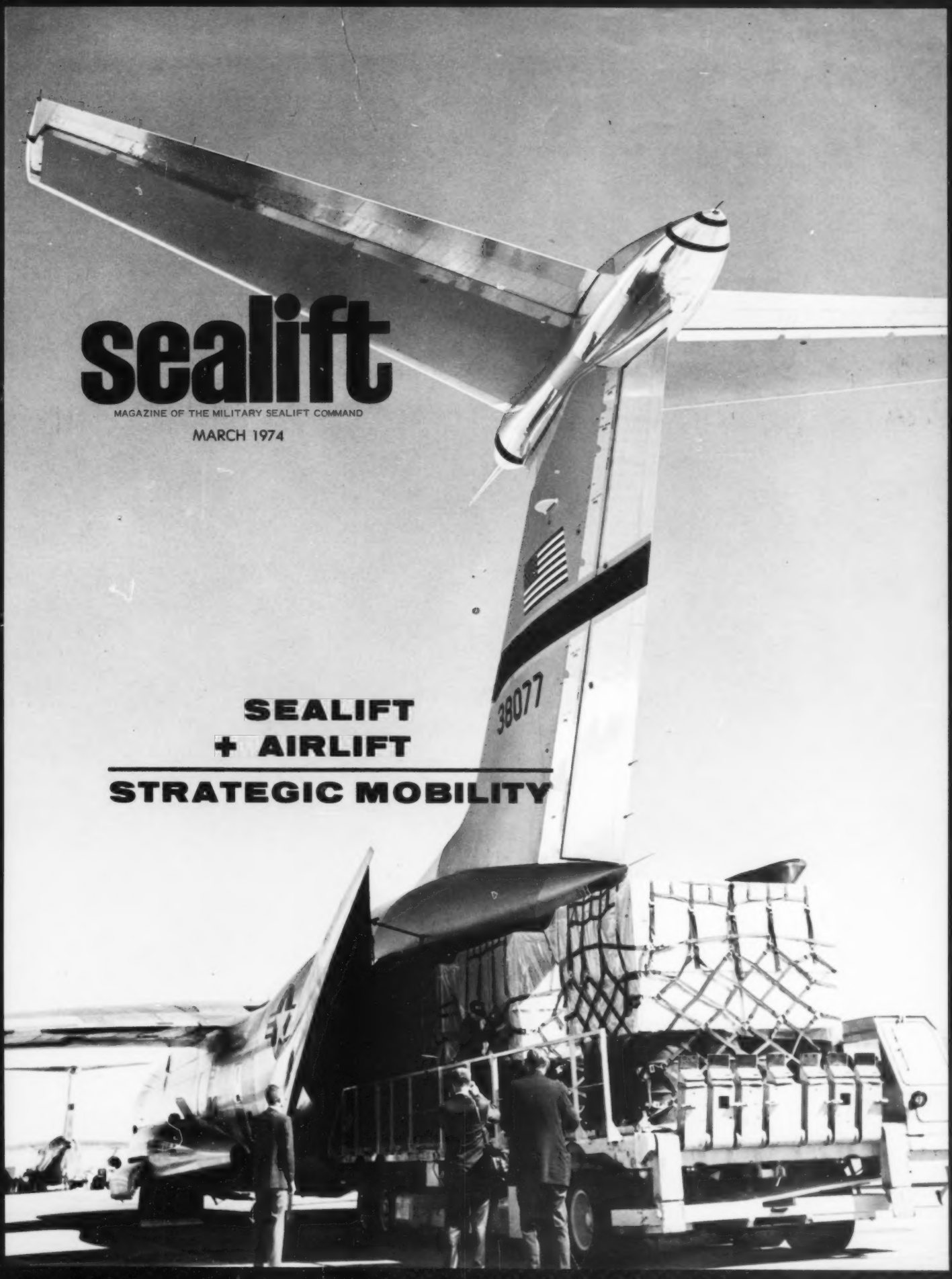

sealift

MAGAZINE OF THE MILITARY SEALIFT COMMAND

MARCH 1974

SEALIFT + AIRLIFT = STRATEGIC MOBILITY

MSC and MAC

"Military Airlift Command and Military Sealift Command . . . are complementary and essential to the national strategy of realistic deterrence. Neither can do the job alone."

Those words are used by General Paul K. Carlton, the commander of Air Force's Military Airlift Command, in an article which appears in this issue of Sealift. I could not agree more with his view and I am proud of the fact that MAC and MSC, key organizations of the Defense transportation team, enjoy a close and cooperative working relationship. Together, MAC and MSC make a continuing and sizable contribution to national security.

While MAC has a modern jet airlift force, one which proved its worth in the recent Middle-East crisis, we in MSC have problems that need to be overcome. One is the gradual demise of breakbulk ships which are being forced into retirement by modern, fast vessels such as container ships, and barge carriers. Breakbulk ships would be critically needed in contingency situations to supply troops deployed by MAC. There is some hope, however. A recent bill introduced by Representatives Leonor K. Sullivan and James Grover would allow relatively modern dry cargo ships to be purchased and put into the National Defense Reserve Fleet, replacing older vessels scheduled for scrapping.

There also is greater interest in Defense circles, as I see it, concerning the need for exercises in which our sealift capability can be tested. As General Carlton pointed out, the MAC system often is tested "through regularly scheduled joint training and exercise programs." I believe that capability of both MSC and merchant marine assets should be similarly evaluated under the most challenging peacetime conditions, via a series of joint exercises involving the organizations we support, Army, Navy, Marines and Air Force. At the

present time, the energy shortage being with us, there may be only a limited opportunity for such exercises. However, once that problem has been overcome, I believe that joint exercises could be held on a regular basis.

General Carlton also commented on two other points I consider critical, one being the MAC Reserve Associate Program in which air reservists actually fly command aircraft, and the contribution made by the commercial airline industry.

While MSC has no comparable reserve program, I feel that the new Merchant Marine Naval Reserve program is going to produce great dividends – with Navy trained reservists on merchant ships becoming thoroughly familiar with operations of Navy ships they would support in an emergency.

At the same time, like General Carlton, I am very much aware of MSC dependence on assistance provided by our commercial counterparts, the U.S. Merchant Marine.

Without a strong MAC and MSC, without strong air and maritime industries, U.S. Armed Forces would not have the mobility which is essential to their overall capability. Without the ability to project its power – both militarily and economically – the United States' position as a major world power would be diminished, its security threatened. In reality, the means of transport, sea and air, are literally extensions of military weapons systems. All of which proves that we in MSC should be thoroughly familiar with not only our own missions and assets, but also those of the organizations which complement our efforts. General Carlton's article in this issue of Sealift provides much of the information needed to develop the understanding we should have.

John D. Chase

Commander, Military Sealift Command

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MAGAZINE OF THE MILITARY SEALIFT COMMAND

Vol. XXIV No. 3 **Washington, D.C.** **March 1974**

Features:

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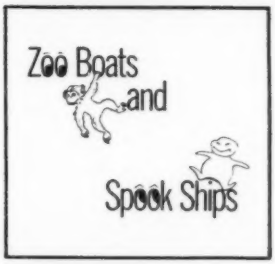
Military Airlift Command

Tasks and accomplishments of MSC's sister organization for strategic airlift are detailed by the MAC commander, General Paul K. Carlton.



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Zoo Boats and Spook Ships

Marine architects of the world beware. Someone is gaining on you!

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The Ugly Ducklings

Liberty ships met emergency sealift needs during World War II and earned an illustricus reputation.

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COVER: Cargo slated for delivery to U.S. troops overseas is loaded aboard a Military Airlift Command C-141 Starlifter. See story on page 4.

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Need to move an army in a day? Or rescue thousands of earthquake victims? Call on Military Airlift Command.

Fly Me... I'm MAC

By General Paul K. Carlton

Commander, Military Airlift Command

Current national strategy requires a responsive, strategic mobility system through which we can deploy balanced forces anywhere—at any time. This system enables us to multiply the deterrent effect of all U.S. forces.

Two primary elements of this system are the Military Airlift Command (MAC) and the Military Sealift Command (MSC). They are sometimes regarded as having similar responsibilities, and therefore, in competition with one another for limited resources. In reality, their unique properties are complementary, and essential to the national strategy of realistic deterrence. Neither can do the job alone. Comparatively, airlift cannot move the volume of outsize cargo and equipment; whereas, sealift cannot move it as quickly. Thus, the composition of these two organizations contributes to a single transportation force designed to fulfill strategic mobility requirements.

The Military Airlift Command is organized as a major Air Force command. However, it provides a total spectrum of airlift services for the entire Department of Defense and other government agencies. Airlift tasks are performed in accordance with Joint Chiefs of Staff priorities, and by the Secretary of the Air Force, who is single-manager for Defense airlift, and by the commander of MAC, as executive director of the single-manager operating agency for airlift services.

The effectiveness of the airlift force centers around the military airlift team of C-141s and C-5s. These jet aircraft were designed as a team and, as such, comprise an airlift capability that is unsurpassed in the world today.

The C-141 Starlifter is the workhorse—and is the best all-purpose aircraft that MAC has ever had. In fact, in its support of Southeast Asia, it has exceeded all previous airlift accomplishments.

Its primary job is to deploy troops, oversize equipment, and general cargo. When employed in the cargo mode, it can handle 10 pallets weighing as much as 35 tons. Reconfiguring the aircraft for troop movement would permit the airlift of 154 combat troops, although under normal circumstances, 94 seats is standard. If combat conditions preclude landing, these same troops—and equipment—can be airdropped.

In addition, the C-141 has proven to be a very reliable and versatile strategic aeromedical airlift vehicle, and is the primary aircraft for the movement of patients from overseas to the United States.

The C-5 Galaxy complements the C-141 by providing an outsize capability which permits air transportation of almost all general purpose forces' combat equipment. For example, one C-5 load could consist of the largest Army battle tank (M-60), along with two Huey helicopters, five armored personnel carriers, and three trucks with trailers.

The drive-through capability of the C-5 permits offload in the destination area in a matter of minutes—even under the most adverse conditions. Other features, such as kneeling and short-field capabilities, inertial navigation equipment, an inflight malfunction detection analysis and reporting system, and an all-weather airdrop navigation system, provide unprecedented flexibility, reliability, and responsiveness.

To more fully exploit the potential of the all-jet airlift team, the Reserve Associate Program was developed. Under this program, MAC reserve units are matched up with each airlift squadron, to help fly, maintain, and support the aircraft of the active force. As the associate crews train for their emergency augmentation mission, they generate additional airlift productivity. The mobilization of all reserve units during an emergency would increase strategic airlift capability by as much as one-third.

MAC's wartime capability also depends on the augmentation provided by the Civil Reserve Air Fleet. This is a partnership arrangement through which the most modern aircraft in the United States' commercial industry are identified for call-up in one of three stages to meet varying levels of emergency. Total activation of Civil Reserve Air Force resources would provide an airlift capacity comparable to that of the military force. Thus, approximately one-half of MAC's wartime capability is provided by civil resources. Under this partnership, military aircraft perform the combat deployment of troops and heavy equipment, while the commercial carriers augment this airlift by transporting additional troops and cargo to rear areas.

C-5 Galaxies provide capability needed to support a modern Army.

The operational activity of the entire airlift system is directed from headquarters at Scott AFB, Illinois, through two MAC numbered air forces, and a global system of area and base airlift command posts.*

Information is made available through an expanding command and control system, which will soon include communications satellites.

Branching off these central operations, a worldwide communications network, reaching into every support base, permits the recall or diversion of aircraft from any area. Consequently, if an emergency arises, many air lines of communications are in-being and ready to support contingency operations.

MAC's primary global mission is to deploy American fighting forces and all their firepower into a troubled area, and then to furnish these forces the supplies and equipment immediately needed to maintain their combat effectiveness. The readiness to perform this combat mission is largely derived from an extensive peacetime operation.

Every day, nearly 150 all-jet aircraft are away from their home stations, operating throughout the global airlift network. A valuable by-product of this peacetime training is a very effective logistic support system which serves U.S. forces stationed around the world. This system includes—in addition to the aircraft, aircrews, and command and control facilities—maintenance and support personnel, aerial ports, air routes, and overflight rights.

This is actually a complete system, and it really works, because, as the system is continually exercised, MAC is assured of a flexible, reliable, and responsive airlift posture.

This entire system undergoes additional scrutiny through regularly scheduled joint training and exercise programs.

In Fiscal Year 1973, more than 35,000 hours were flown by C-141s and C-5s participating in Joint Chiefs of Staff directed exercises in which United States combat forces worked closely with the armed forces of allied nations under a wide range of geographic, climatic, and operational conditions.

The success of such operations must be credited to the close cooperation developed through affiliation programs with combatant forces. Airlift wings are linked with specific Army, Marine, and Air Force combat units with whom they have practiced on a regular basis.

As part of this program, two types of training have been conducted—air-transportability, and airdrop. Air-transportability training is designed to provide standardized procedures for preparing loads for air movement, and in the actual on-off-loading of the aircraft.

Airdrop training refines joint methods for aerial delivery of troops and many kinds of equipment under conditions which simulate combat as closely as possible. Although the emphasis on airdrop over strategic distances has decreased, this capability is a logical extension of the primary mission—airland. It offers military strategists a further method of enhancing national policy.

In the final analysis, the combat effectiveness of United States fighting forces depends to a great extent on the responsiveness of the strategic airlift force, as well as the planning, training, and practice derived from joint training programs and exercises.

This responsiveness has been proven many times, and many examples could be cited. The most meaningful, however, are two of the most recent—the airlift in response to the 1972 spring offensive in Vietnam, and the just-completed Israeli resupply airlift.

A self-propelled 175mm gun is unloaded at Lod airport in Tel Aviv.

* MAC resources, in addition to the airlift force, include three technical service organizations: the Air Weather Service; the Aerospace Rescue and Recovery Service, and the Aerospace Audiovisual Service. Two independent MAC wings provide specialized service. The 89th at Andrews AFB, Md., provides airlift for the President, high government officials, and distinguished foreign visitors; and the 375th, at Scott AFB, Illinois provides domestic aeromedical airlift service for personnel of the Department of Defense and other government agencies.

C-141s configured for medical evacuation provide a humanitarian aspect to airlift.

The spring offensive saw the C-5 at work, for the first time, in the role for which it was designed—the combat deployment of outsize equipment. Its performance was nothing short of phenomenal. Three C-5s each airlifted two 98,000 pound M-48 medium tanks, and 27 C-5s delivered 80 M-41 heavy tanks to South Vietnamese aerial ports.

With engines running, offload procedures permitted the aircraft to spend as little as 20 minutes on the ground, significantly limiting their exposure to enemy action.

The tanks replaced combat losses in the South Vietnamese Army and were used in the defense around Hue. In subsequent counterattacks the South Vietnamese recaptured Quang Tri and stopped the thrust of the North Vietnamese offensive.

More than 100 C-5 missions delivered heavy, outsize equipment to the war zone in the six weeks following the start of the offensive. This rapid deployment of combat equipment significantly impeded the thrust of the offensive, and measurably assisted the South Vietnamese in bolstering their weakened defense.

The recent resupply effort in the Mideast was a classic demonstration of the effective use of strategic airlift.

On October 13, 1973, nine hours after the air re-

supply decision was made, C-141s and C-5s were enroute to Israel.

The first to arrive at Tel Aviv's Lod Airport was a C-5 loaded with more than 193,000 pounds of cargo. Within three days, MAC reached an average daily flow of nearly 1,000 tons.

By November 2, the U.S. aerial resupply had almost equalled the achievements of the Soviet airlift to the Arabs. This was a notable accomplishment because, by then, the Soviets, using AN-12s and AN-22s, had accumulated over 900 missions.

Another significant fact is the MAC resupply effort involved a one-way average distance of 6,450 nautical miles compared to the Soviet's average mission distance of 1,700 nautical miles.

The logistics of this massive airlift were further complicated by the lack of bases near the flight path. This situation demanded near perfect reliability from MAC aircraft.

By November 15, thirty-three days after the first arrival, MAC had airlifted over 22,000 tons of supplies in 421 C-141 and 145 C-5 missions.

A decisive factor in the success of the U.S. airlift was the employment of the C-5. It can haul 3½ times the tonnage of the C-141. However, the one characteristic that made it indispensable is its outsize cargo capacity. Among the cargo airlifted to Israel on C-5s were items which, because of their size, could not have been delivered by any other aircraft. Additionally, records indicate that the C-5 used about 24 per cent less fuel than the C-141, for each ton of cargo delivered.

It was this concentrated strategic airlift that helped prevent a dangerous tilt of the balance of power in the Middle East, and aided in the accomplishment of a ceasefire. This crisis underscored MAC's flexibility and responsiveness, particularly since the entire operation was accomplished without degrading other worldwide commitments, and without mobilizing the reserves, or activating the Civil Reserve Air Fleet.

The Military Airlift Command has proven it can readily adapt to changing national security strategies. Today's all-jet military and civil strategic airlift system is a substantial pillar of realistic deterrence.

But, it should be obvious that airlift alone cannot support a deployment force indefinitely. A strong sealift force must be ready to transport the vast bulk of continuing replacement equipment and supplies.

This total mobility system is a vital part of international stability, because it provides the strength to negotiate with both our allies and our potential enemies. And, as our nation faces the continuing challenges of the 1970s, this system will contribute to the realization of the most vital of our national objectives—a lasting peace. ⚓

General Paul K. Carlton, commander of Military Airlift Command, has been a pilot since receiving his wings and commission from the Army Air Corps in April, 1942.

During World War II he was a B-17 instructor pilot and in 1944 flew B-29 aircraft with the first unit operating against the Japanese mainland, accumulating 350 combat hours.

Following the war he was assigned to Strategic Air Command's (SAC) first atomic bomb organization and in 1949 he began a four-year assignment as aide-de-camp to SAC Commander, General Curtis E. LeMay.

General Carlton later held several key positions in SAC. He has attended the University of Pittsburgh, Ohio University, George Washington University and the National War College in Washington, D.C.

Among his many awards and decorations are the Distinguished Service Medal, Silver Star, Legion of Merit, Purple Heart and Distinguished Flying Cross.

Death of Patti I

By Louis R. Granger

The Devil's Triangle has claimed another victim. The 35-foot fiberglass yacht Patti I, beaten to death by wind and wave, was left to sink in the Atlantic near Bermuda. Her captain and crew, battered, bruised and exhausted, were, however, rescued as their small vessel was taking "one hell of a beating," according to her skipper Edward J. Bergin.

Bergin and his two-man crew, O. Jack Buchanek and Ronald Grandon, all of the Washington, D.C. area, were saved by USNS Norwalk, a missile resupply ship in the Military Sealift Command's special project fleet.

Bound for the Virgin Islands from Solomons, Md., Bergin took his new ketch-rigged boat east around Bermuda and then planned to sail south to the islands. "It's not a bad way to go if you don't have force 10 seas," he said.

Force 10 is a gale with winds 48 to 55 miles an hour. Waves are very high and the rolling of the sea becomes heavy and shocklike.

From the time Patti I left the Chesapeake Bay on November 3, to the hour she was abandoned near midnight November 12, Bergin had been washed overboard, the mizzen sail had been torn off by the wind's force, the auxiliary engine had conked out and the boat had actually been picked out of the water and "turned so that the mast was four feet under water," said Bergin.

Bergin admits, however, that November was the wrong month to sail in a small craft to the south Atlantic. Although the Coast Guard at Norfolk predicted several days of good weather, "There was nothing but storms out there. We had good winds out of the bay, but there was a tremendous swell that should have tipped us off that something was up."

There is something almost always up during fall and winter months in the area known as The Devil's Triangle, also called the Bermuda Triangle. Roughly a triangular area with tips at Miami, Bermuda and Puerto Rico, scores of ships and airplanes have been lost their since about World War I, many under mysterious circumstances. The

Offering a "thank you" to Rear Adm. John D. Chase, commander of Military Sealift Command, are O. Jack Buchanek (center) and Edward J. Bergin, skipper of the Patti I.

area is a breeding ground for hurricanes and violent storms, and the weather tends to be unpredictable.

The Patti I made 120 miles the first 24 hours. The second day out from Norfolk the winds increased and the ocean became wilder. During the night of November 8 the storm grew to near hurricane intensity—the mizzen sail tore off, the dinghy was swept from its davits, a sea anchor that had been set earlier was punctured and the engine knocked out.

The next day was perhaps even worse. Grandon was stationed as a lookout at the stern in case the high following sea threatened the boat. Bergin was at the helm fighting to keep steerageway and the stern to the wind. Both were attached to the boat with lifelines. Then a maverick wave hit broadside. Its force smashed the Patti I over and threw Bergin into the sea. Two of his three lifelines pulled off before he was able to pull himself back aboard by the third one. Below, Buchanek was thrown across the cabin and crashed through a teakwood deck support. Later he counted 44 bruises on one leg.

For half a day the boat surfed down 40-foot waves at nearly 15 knots. The fiberglass hull flexed, crushed bulkheads and twisted so that the seam between the deck and hull opened. The boat was shipping water from below deck.

"I could see daylight between the deck and hull joint," said Buchanek. "The hull was vibrating like a vibrator chair."

And so it went for three more days. "By November 12 we were convinced the ship and rigging were no longer reliable and she probably wouldn't take another storm. We began signaling passing ships with flares," said Bergin.

Wallowing under bare masts the Patti I was apparently sighted about 2 p.m. "It was an orange hulled freighter but it was too rough for me to hold my glasses steady and identify it," said Bergin. "We struck two signal flares and put up a distress signal flag. It circled around a bit like it was looking us over and then it took off."

"It was most disconcerting to think that rescue was near at hand, then see them sail off leaving you sit there. It seemed that the old camaraderie of the sea was no longer. We resigned ourselves to our fate, believing it to be out of our hands," he said.

Finally, about dusk, the Spanish ship Sao Palo appeared. "She came in and made about three passes to get to us but it was a big ship, a big freighter, and had a lot of windage on it and we just were not able to get together."

"Then a Navy ship, the Norwalk, came up. Gentile (Norwalk's skipper Peter Gentile) didn't see us. What he did see was the Spanish ship maneuvering around in violation of the rules of the road for large ships at sea. He made radio contact with the Sao Palo to inquire why it was violating the rules of the road. The Spanish captain said there was a small U.S. sailing yacht in distress. By then it was dark and Gentile put on the searchlights. He informed the Spanish vessel that since we were a U.S. vessel he would pick us up. He came in very smartly and laid his ship right along side our hull and put a ladder over to us. We were aboard by midnight—one hungry, tired group."

The Patti I, shipping water, her seams torn open, and her engine dead, was reluctantly abandoned by Bergin.

For the next nine days the yachting trio rested and told their story to the crew of the Norwalk which continued its passage to Scotland arriving November 21.

"We got very good treatment by the Navy people," said Bergin. "They let Jack stand watch and take star sights. It certainly was a happy ship—the morale was high and the food very good."

Disappointments continued to plague Bergin and his friends, however. They checked with the U.S. consulate in Edinburgh and were offered no assistance, said Bergin. "They made no inquiry as to our health, if we needed assistance, nothing."

Bergin used a credit card to go home and Buchanek and Grandon went off for Spain. Grandon remained to do some freelance writing and Buchanek later returned to work at the Labor Department along with Bergin.

The cruising life is far from over for Bergin. Already there is a Patti II, a sturdier built 35-foot fiberglass boat built in Sweden.

"I've decided that if a boat does not qualify for a Lloyds A-1 rating then it shouldn't go to sea," said Bergin. The Patti II has an A-1 hull rating.

Bergin holds no grudge for the builder of Patti I. "I can't really blame the boat's manufacturer because they just don't build them for force 10 seas."

"We all have more respect for the sea and appreciation for the Military Sealift Command," said Bergin.

Zoo Boats and Spook Ships

By Larry C. Manning

Beware, marine architects of the world. Don't look back for someone is indeed gaining on you.

Your place within the architectural field is being threatened.

Feel secure just because your name is Jerry Goldman, and you designed that huge modern barge carrier, the LASH? Or, you think your professional standing is unrivaled just because your name is Frank Nemec, and you are the father of another giant, barge-carrying ship, the Seabee?

If so, you may not be aware of the innovative, 20th century ship designs of Dawn Fuentes, Colleen McClernon, Joan Marquez—and other members of the third grade class at St. Charles Borromeo school in Brooklyn, N.Y.

Dawn has designed a most unique vessel, a spook ship. And Joan has developed a design that meets other spiritual needs. She has drafted plans for a missionary ship. Colleen's creative mind enabled her to complete plans for a modern version of Noah's ark—a zoo ship.

To make the news of an assault on their profession by younger and probably more imaginative minds even more bitter, marine architects might as well know that they have been sold out by one of their own. Miss Elizabeth Tracy, a third-grade teacher at St. Charles Borromeo school, has a friend, John Malone. John is a naval architect who works for J. J. McMullen Associates in Washington. So when Miss Tracy asked him to talk to her class he talked about what he knows best—naval architecture.

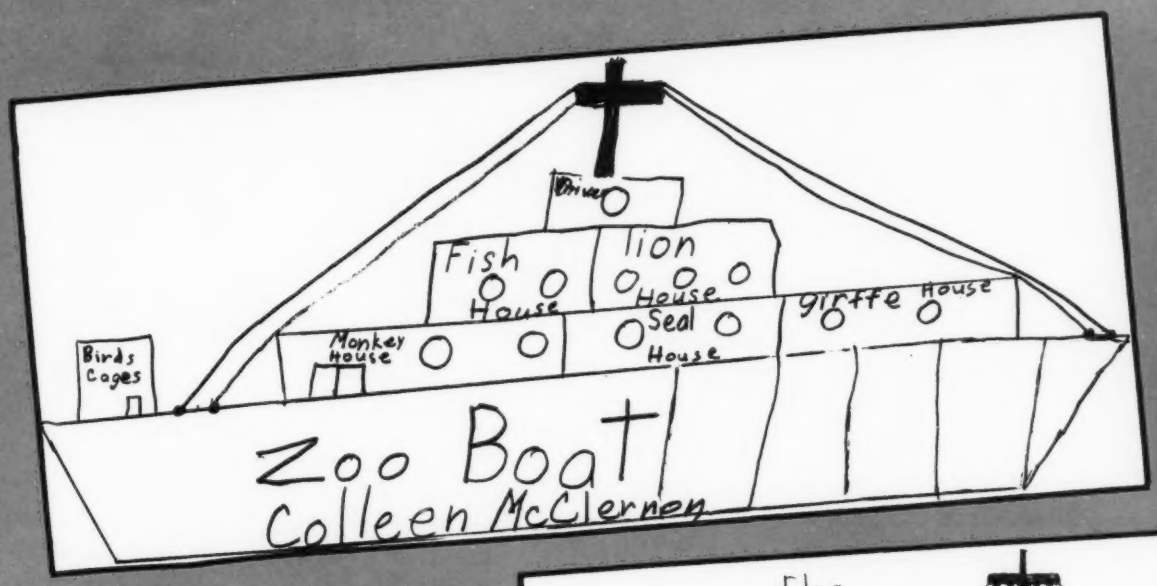
That started the whole ball rolling and it gained momentum when Miss Tracy suggested that her class design new types of ships. The kids already were familiar with destroyers and similar Navy ships which slip in and out of Brooklyn Navy Yard.

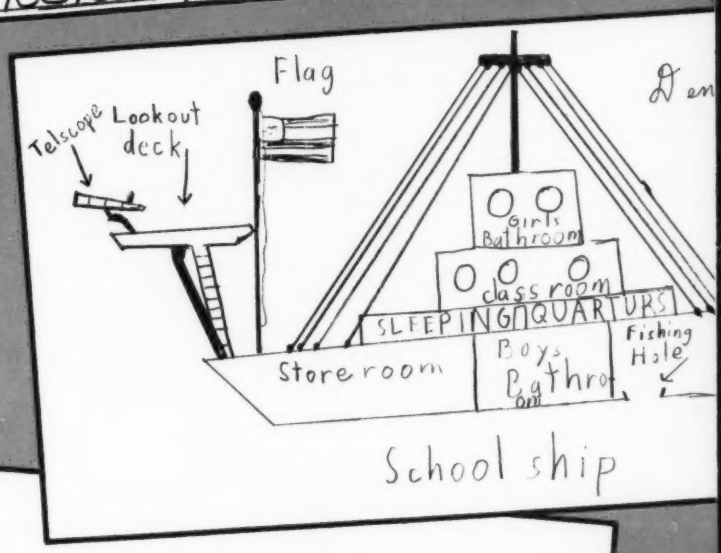
The eight-year olds accepted the challenge, and their works indicate that adults, for all of their allegedly greater powers of logic and reason, definitely lack the free soaring imagination of the youngsters.

The budding marine architects also have a fine sense of the practical. Almost every ship design incorporated lunch rooms, plus boys and girls bathrooms. Some had special rooms for the teachers. Unlike present day Navy and commercial ships which generally are not equipped to accommodate both sexes, the ships the third-graders designed are able to handle mixed crews.

William McCarthy's ship can even operate in two environments. Equipped with three wheels, and a roof, it looks somewhat like a Detroit product—able to move over either land or water. Dennis Gomez also has a practical mind. He designed an "ice breaker" which is 100 feet wide and 1 mile long. Engine rooms and bathrooms fill the latter half of the ship at the lowest level and a dining room sits high atop a huge two-legged tower gracing the bow of the ship.

He even had a name for his "ice braker," the "Santa Fee." So did Miss Fuentes. She named her


Driver
Fish House
lion House
Seal House
girffe House
Monkey House
Birds Cages
Zoo Boat
Colleen McClernon


Flag
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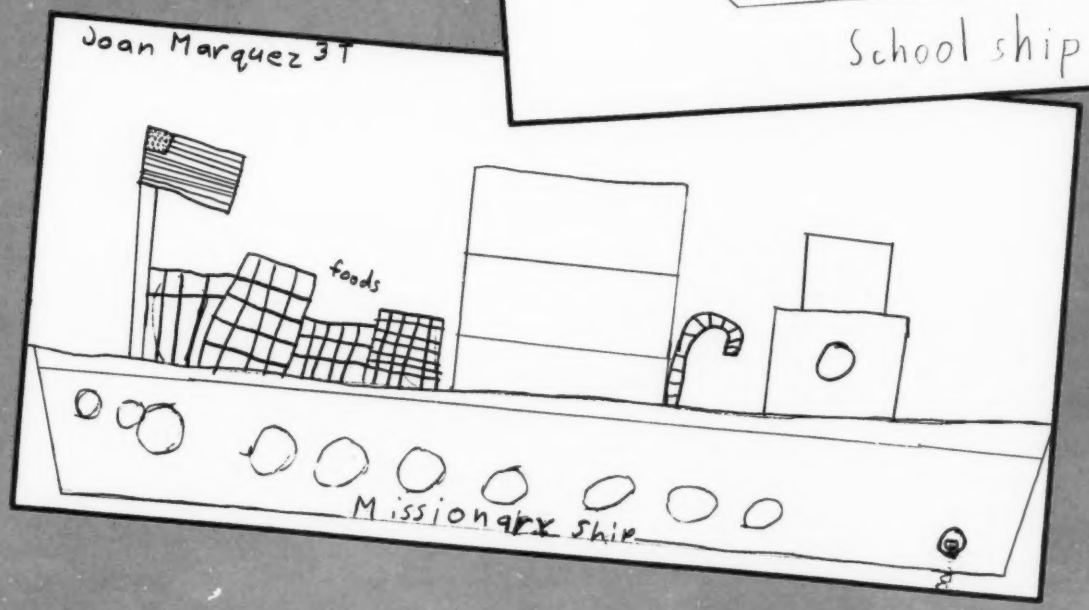
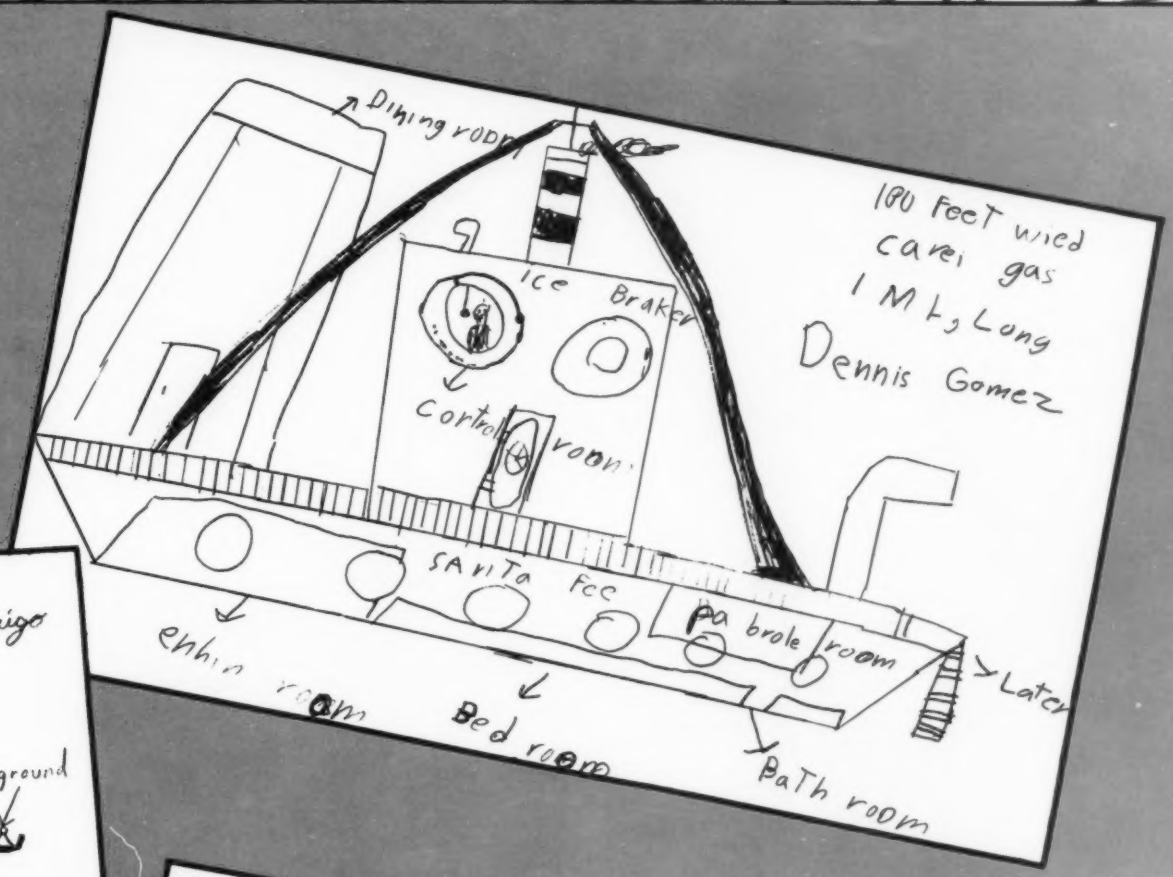
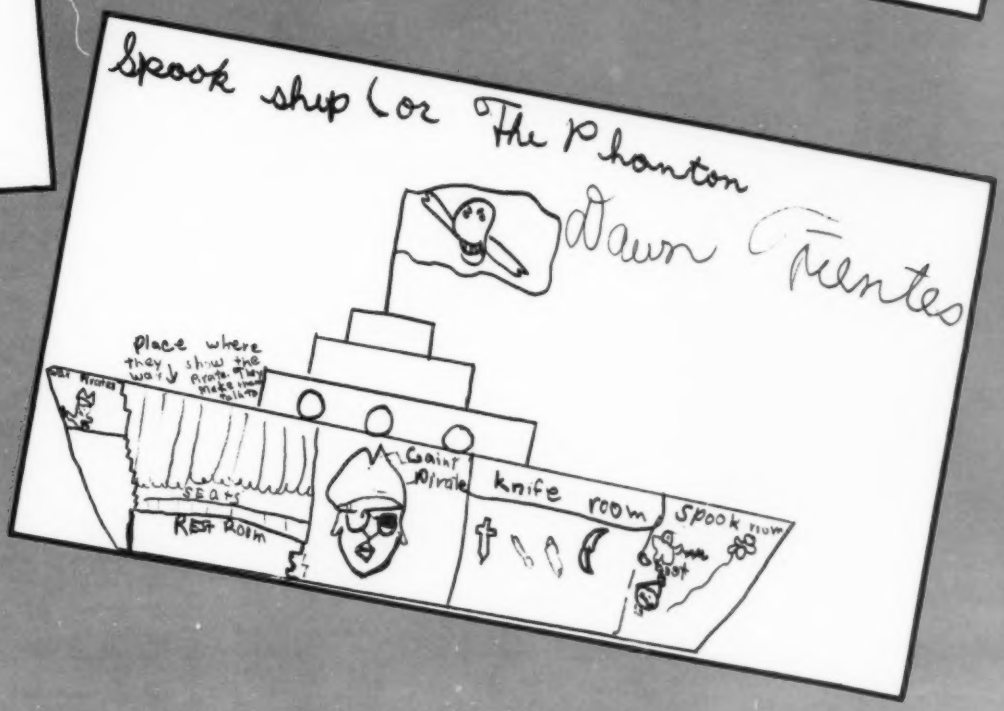
Lookout deck
Girls Bathroom
class room
SLEEPING QUARTERS
Store room
Boys Bathroom
Fishing Hole
School ship

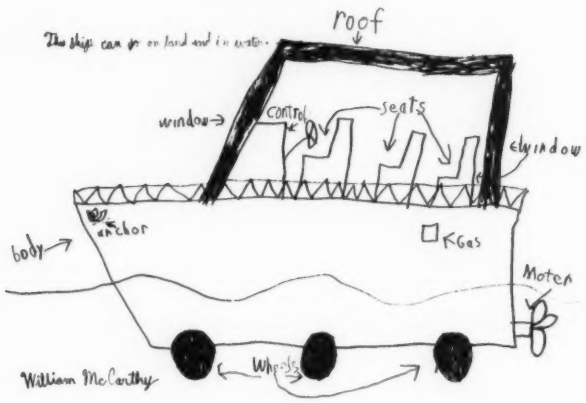

Joan Marquez 3T
foods
Missionary Ship

BULLETIN BOARD





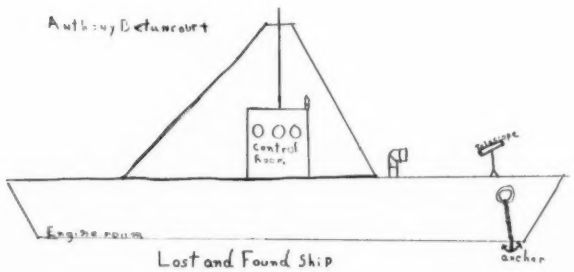
spook ship "The Phantom." It has a large spook room at the stern, with an equally large "knife



room" adjcent to it. Ahead of that, below the water line, are a special space for a giant pirate, seats, the inevitable restrooms and a special display of wax pirates in the bow. Like Walt Disney's characters, the wax pirates can be made to walk the decks and talk by someone known as "they."

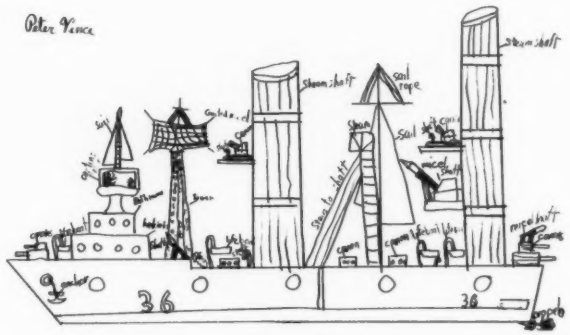
Miss McClernon's zoo boat houses fish and lions on the top deck, birds, monkeys, seals and giraffes on a second deck, with assorted animals stowed below. At the top level, is a small cabin for the ship's "driver."

While the missionaries aboard Jean Marquez' ship search for souls to save, their human needs will be amply taken care of. The forward half of the missionary ship is reserved for foods.

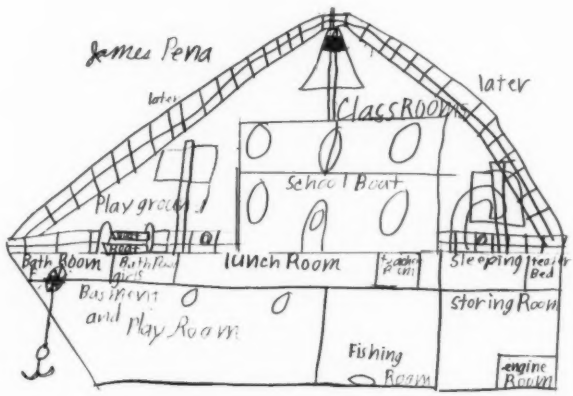


Practicality of the youngsters also is seen in Anthony Betancourt's drawings. His lost-and-found ship has space reserved only for an engine, a control room and a telescope. The remainder is available for items lost—probably mittens, jackets, school texts, bicycles and other things kids generally mislay—and items found such as toads, snails, snakes, injured birds, rocks, and the neighbor's junk.

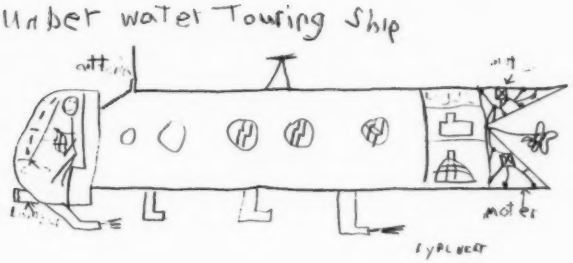
Influence of the classroom environment is evident in Dennis Albrigo's school ship. It has a playground at the stern and classrooms sandwiched between the girls' bathroom above and sleeping quarters below. The boys' bathroom was on the lowest level, right next to a space he labeled "fishing hole." Could that be favoritism, or aren't girls interested in fishing?



In a very detailed design drawing, Peter Vince incorporated both sail and steam power. "Guited micels" were located both fore and aft and "canons" were spotted throughout the deck, some in turrets. The "captain's room" was located just aft of the bow, mounted below the sail and above a bathroom, looking somewhat like a modern-style TV set mounted on a revolving, inverted-pyramid stand.



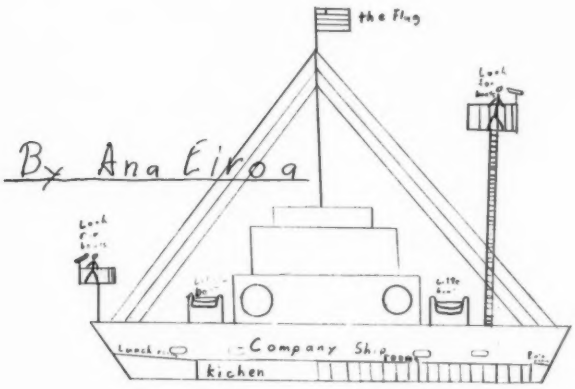
James Pena also foresees a market for school ships. His has a "basement and play room" at the lower level, near the bow, with a fishing room and "storing room" at the stern. Above these functional areas were boys' and girls' bathrooms, a lunch room and ample space for the teacher, including a teacher's room, a sleeping room, and an extra bedroom. One small classroom was set aside, next to a large playground.



Albert Simon's ship has one feature many others have, an extended "ruter." He designed a studio ship for artists, incorporating "windows" both above and below the waterline. Albert also came up with a design for an underwater touring ship, which looks something like an elongated helicopter. Bumpers are placed at the front to minimize damage from a collision with an underwater mountain peak—or a whale. At the stern, a screw is housed in a V-cutout section but the underwater touring ship also has three right-angle jet exhausts underneath the ship bottom.

Obviously knowing something about tourists, Albert thoughtfully built in a luggage room.

Ana Eivoa's conceptual design is for a company ship, and it has two "little boats" and two towers which she labeled "look for boats." However, practical Ana didn't miss a bet that many others had. Her company ship has a "kichen."

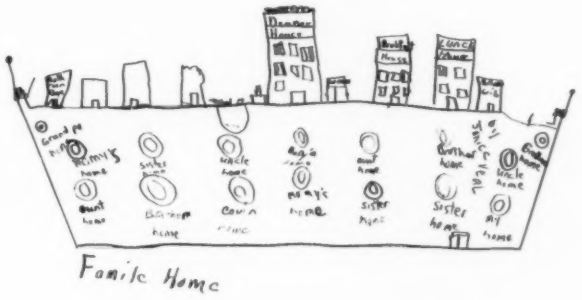


One youngster, Susan Clune, had an idea the Navy might use. Her battleship is a sleek-looking vessel with one cannon at the bow, and another at the stern, but with bathrooms taking up the entire middle section.

Sherman Chin is obviously of a scientific mind. His design is for a jet and submarine combination. The detachable front-half can zoom out of the water into the stratosphere, while the latter half—looking like a blocky underwater barge—remains below the water and provides living areas for support crews.

One young miss, Susan—who neglected to fill in her last name—knows where the big money is. She created a special movie star ship with padded seats and a table located on a bridge extending over the middle section of the craft. Below the seats and table are restrooms, three of them. Perhaps the third one is intended for movie stars such as Flipper, Moby Dick, Lassie and other non-humans.

Unmoved by the lures of possible fame and fortune, one third grader—first name unknown—came up with a seagoing version of a "familie home." Smack in the middle of the vessel, on the deck is the three-story "Denner house." The girls' bathroom is located at the stern, on deck, with a similar facility for boys at the bow. Below decks are 16 portholes, all earmarked for the obviously large Denner family. Grandpa's reservation was at the bow end of the seagoing "familie home" with grandma put at the back of the ship. Obviously, she is not a successful women's libber. Other portholes were labeled "momy's home," and "dady's home" with homes reserved for uncles, aunts, sisters, brothers and cousins. A second "momy's home" adjoined the one reserved for dad. Obviously Mrs. Denner rates, she had two "homes" set aside for her use.



All of which leads one to believe that there is hope for the U.S. Merchant Marine. While conventionally minded adults, obsessed with the profit motive, design only huge ships to carry oil, ore, minerals, merchandise-packed barges and containers, the younger marine architects are catering to our more personal needs. It's nice to know that ships will be available to carry animals for the zoo, to fulfill the needs of movie stars, missionaries, and students, or to allow tourists to travel the bottoms of the oceans. And, if housing costs continue to rise, maybe more of us can move our entire families to ships like that designed for the "Denner familie home." ⚓

The Ugly Ducklings...

Constructed quickly to meet emergency shipping needs of World War II, Liberty ships earned an illustrious reputation responding to arduous wartime tasks.

Homeward bound soldiers in 1946 look over the George Matthews at Staten Island.

By Linda McDaniel

It was a brisk, early fall morning and Bethlehem-Fairfield shipyard in Baltimore, Md. was deluged with thousands of spectators. Many came in extra streetcars dispatched for the day, on foot, or in hundreds of cars that lined the yard's access roads. The Baltimore & Ohio Railroad even ran a special train from Washington to accommodate government officials. Reporters crowded around the speaker's platform as the Baltimore Civic Band struck up the "Star Spangled Banner." All vied for the best view of the freshly painted ship.

The date was September 27, 1941, designated Liberty Fleet Day. The occasion was the launching of the first Liberty class ship, the Patrick Henry.

Fourteen ships were launched nationwide that day, with more than 2,700 Liberty ships to follow. The United States would need every one of them to carry troops and supplies, for the Patrick Henry went into service only 23 days after the devastation of Pearl Harbor.

The destroyers USS Greer, Kearny, and Rueben James had already been attacked by German submarines off the coast of Iceland, and the threat of U.S. involvement in World War II was becoming stronger daily. Topping the list of wartime needs for the United States and Allied powers was ships.

After World War I the U.S. shipbuilding industry had declined rapidly, with only two dry cargo ships

constructed between 1922 and 1937 in U.S. shipyards. Aside from the construction of a few tankers, and some cargo ships built in foreign yards, the U.S. Merchant Marine gained few vessels throughout these years.

It wasn't until passage of the Merchant Marine Act of 1936, which provided for establishment of the United States Maritime Commission, that the country embarked on a shipbuilding program to restore its merchant marine. At that time there were only 10 shipyards in the United States capable of building ocean-going ships more than 400 feet long.

The legislation stimulated shipbuilding in several ways. By authorizing construction and operating differentials, it gave U.S. operators and builders an opportunity to compete with lower cost foreign flag shippers. It also stressed the importance of the U.S. Merchant Marine's contribution to national defense, stating that it should be "capable of serving as a naval and military auxiliary in time of war or national emergency."

By 1940 the United States had pushed production to about 200 ships a year, but shipyards were far from ready to handle an emergency shipbuilding program.

Meanwhile, the British Navy was suffering tremendous losses in the Atlantic from German submarines, with U-boats sinking British ships faster than they could be built. Hundreds of ships were needed to maintain the flow of supplies to Britain and Russia, and they were needed quickly.

In September 1940, Winston Churchill sent a special group of shipyard representatives, called the British Merchant Shipbuilding Mission, to the then neutral United States. Their job was one of urgency, to order ships to offset the Allied losses.

The group took with it plans based on the SS Dorington Court, built in 1939 by J. L. Thompson & Sons, plans also used to construct the first British war-built ship, Empire Liberty.

After considerable debate over plans, Admiral Emory S. Land, then chairman of the United States Maritime Commission, reluctantly decided to build the simple, but slow, ships despite his preference for faster, more sophisticated vessels. From these plans evolved the Liberty class ship, an emergency type cargo carrier that could be mass produced by assembly line methods.

The standard Liberty ship was 441 feet, 3 inches overall, with a beam of 56 feet, 10¾ inches and a loaded draft of 27 feet, 9¼ inches. Its deadweight tonnage was 10,920, gross tonnage about 7,500, and displacement tonnage 14,257.

It had five holds, three forward of the engine spaces and two aft, with a cargo capacity matching that of 300 railroad cars.

They were powered by three-cylinder, reciprocating, steam engines, fed by two oil-burning boilers that produced about 2,500 horsepower, and a speed of approximately 11 knots with the ship fully loaded.

Accommodations on Liberty ships were fair. Officers had private rooms, but crewmen bunked two or three to a room, with about half the crew in the after deckhouse. To the surprise of pre-war seamen, most ships had showers.

Maritime Commission designation of the Liberty ships was EC2. The E stood for emergency, C for cargo, and 2 for large capacity.

The press dubbed them "Ugly Ducklings," after President Franklin D. Roosevelt called the ships "dreadful looking objects." In contrast, Liberty ships were described by maritime officials in a 1941 press release as "having a trim, seagoing appearance. Riding low in the water, with its long, slender prow and its simple, straight-lined superstructure, it will knife its way through the waves as gracefully as any vessel afloat."

After war was formally proclaimed in December 1941, the United States stepped-up its Liberty shipbuilding program to ultimately produce the largest fleet of standard design ships the world had ever seen.

Not even Admiral Land, principal speaker at the launching of the Patrick Henry, anticipated the incredibly fast clip of Liberty ship construction. He predicted a Liberty ship could be built in 4½ to 6 months, considerably less time than ships built during World War I which took approximately 10 to 12 months to build.

Almost miraculously, the Robert E. Peary, built in 1942 at the Kaiser yard in Richmond, Va., was completed in four days and 15 hours.

Uniformity of design, coupled with the fact that 61 per cent of a Liberty ship was prefabricated, resulted in the short construction time. To speed construction, plates on most of the Liberty ships were welded rather than riveted.

Subcontractors, of course, had rigid schedules to meet to support the shipbuilding program. Supply-

Photos by Norton M. Crockett

Assistant Director, MSC ship charter and procurement division

ing all equipment and machinery placed on the Liberty ships, they also had to meet the continuing demand for tools used to piece them together.

Although Liberty ships were quickly constructed, many established a record for endurance, often remaining afloat despite extensive damage inflicted during World War II sea battles.

An explosion once ripped a large hole in the bow of the Matt Ransom while the ship was pulling into a North African port. With fire rapidly spreading throughout the ship, Capt. John Metsall gave orders for all hands to abandon ship. Hours later, when the ship still had not sunk, Captain Metsall and several crew members reboarded her, got her under way, and sailed the ship safely into port.

In March 1944, Virginia Dare struck a mine in the Bay of Tunis. The explosion severed the forward part of the ship a few feet ahead of the deckhouse and engine room. What was left of the vessel, however, was towed to port and salvaged.

On another occasion, a bomb hit the water about 15 yards astern of the John Banvard. The concussion cracked frames and damaged steam and water lines. There were no casualties, and the Banvard made it to Naples, Italy under her own power.

The men who manned Liberty ships were almost as stalwart as the ships. They came from all parts of the United States and Allied nations. It was not unusual for a Liberty ship crew roster to list a mix of Danes, Norweigans, Filipinos, Swedes, and Americans, among others.

Their reasons for going to sea were varied. Many, too old or too young to join the military services, joined the merchant marine to contribute to the war effort. Others were attracted by good wages.

Early in the war, most Liberty ship crews included experienced and trained merchant mariners. But, that soon changed as the demand for a seagoing workforce steadily increased. By 1945 there were more than 250,000 merchant sailors in the merchant marine, an increase of approximately 185,000 people since 1940.

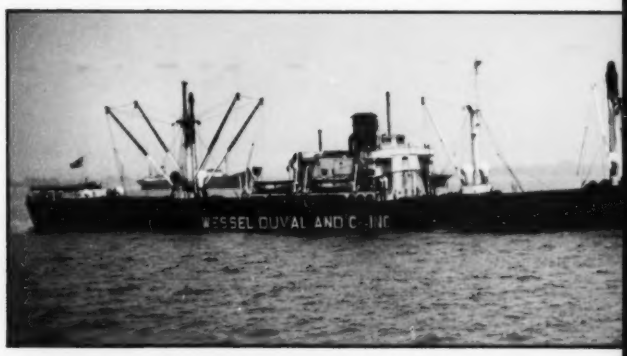
Many were highly competent, and had years of seagoing experience. Others were not so knowledgeable, having only completed an indoctrination course at one of the maritime service training centers. At one time during 1943, when there was a critical shortage of qualified personnel, more than 600 unlicensed deck officers were sailing on Coast Guard temporary endorsements. Somehow though, the often quickly assembled crews usually managed to get their ships under way, deliver their cargo, and return home.

The one thing, however, that applied to all merchant mariners during the war was that they were courageous. Often, ships sailed through dangerous areas without escorts to protect them. Liberty ships were fired on, torpedoed, and mined, in addition to facing the normal hazards during a voyage.

Her 3-inch gun pointing toward France, Henry H. Richardson heads toward Omaha Beach in 1944.

Frederick C. Collin, Baltimore, 1952

The Josiah Tattnall, anchored at Baltimore in 1947.



Although the Liberty shipbuilding era came to a close in July 1945 with the delivery of the Stanley R. Fisher, named after a merchant seaman killed when his ship was torpedoed, their outstanding service did not.

After the war, the ships were sold for approximately 35 per cent of the original construction cost of about $1,600,000. Many purchasers snapped them up and captured a part of the profitable tramp shipping trade, flourishing because of high rates and the scarcity of ships to haul an abundance of cargo. By 1947 there were some 1,200 U.S. flag ships, most of them Liberties, plying the seas, or about as many ships as the entire world's deep-sea

merchant marine in 1939.

Liberty ships also played an important role in rebuilding foreign merchant fleets. The French and Greek governments relied heavily on Liberty ships to build up their postwar merchant marine fleets. Many Liberty ships had been acquired by the Russians through lend-lease agreements. At least one, the Charles Wilkes, renamed the Kolkhoznik, survived seagoing perils long enough to carry Soviet built arms to Cuba in 1967.

The U.S. Maritime Administration also sold many wrecks of Liberty ships sunk during the war, mostly during the 1950s, to salvage companies.

Liberty ships continued to provide useful service through the late 1960s, when age began to take its toll. During 1967 alone, engine room fires and explosions aboard Liberty ships sent a sizable number and their cargo to the ocean bottom. Some were abandoned when their hulls cracked at sea, or their owners were no longer able to cope with soaring insurance costs for aging Liberty ships. Many still sailed despite hull leaks that rendered them impractical to carry anything other than scrap iron and grain, but that too finally became economically impractical. By June, 1973 only 159 Liberties remained, of which only 41 were being operated as cargo ships.

With the exception of a few being used for training, the remaining 48 U.S. government-owned Liberties have been retired to the National Defense Reserve Fleet.

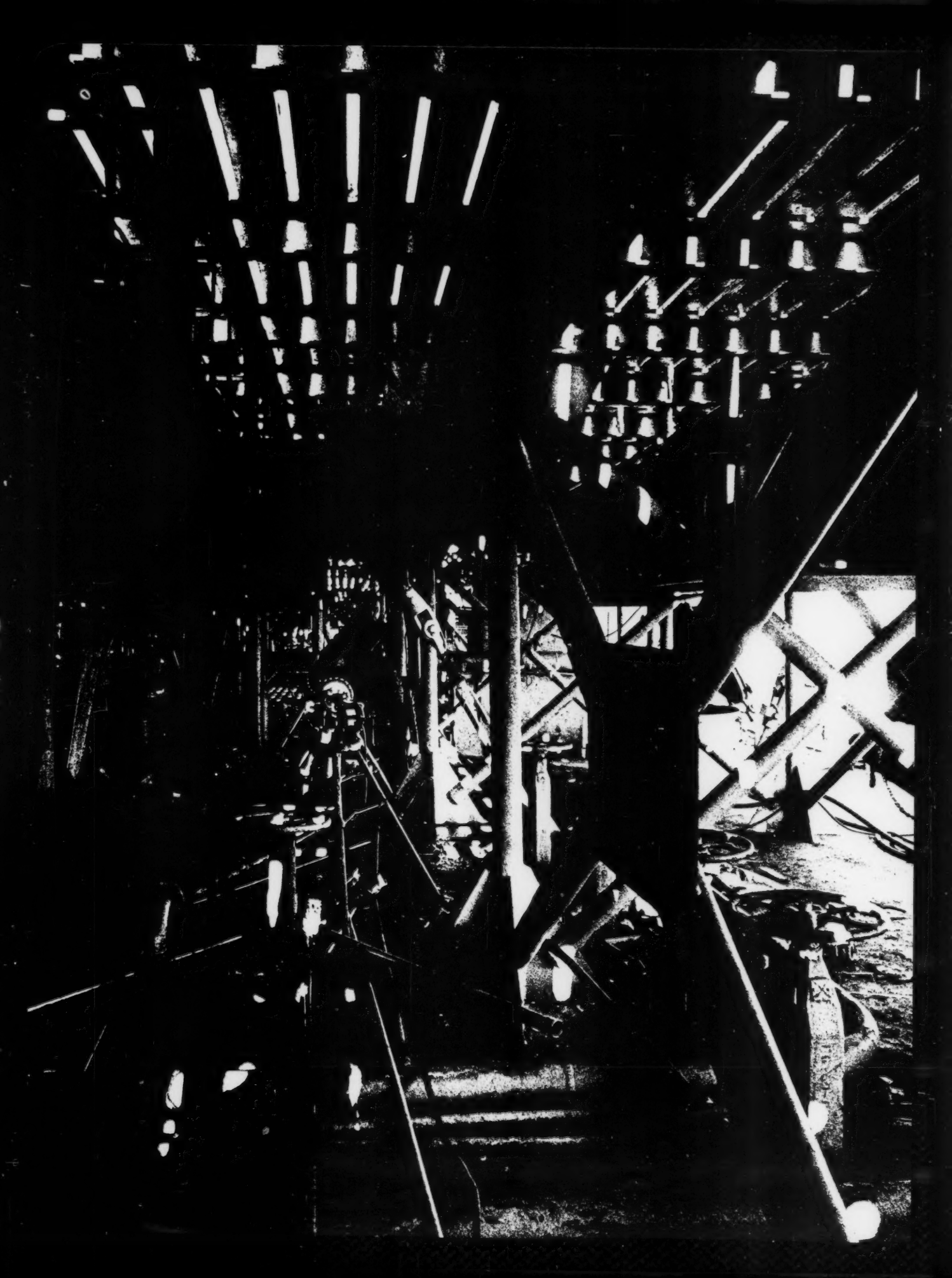
According to Maritime Administration, all will soon be scuttled to serve as artificial reefs, or sold for scrap.

Through growing concern from factions of the maritime industry, historians, museum curators, and those who sailed them during their days of glory, further possible uses for the ships have surfaced. Most however, are unfeasible due to the high cost of readying the ships.

Some suggest that Liberty ships be used in waterfront cities to augment local medical facilities. Still others have recommended their use as rehabilitation centers for drug addicts. Another possible use is as classrooms.

Even though none of these uses are considered practical, the Ugly Ducklings of World War II already have earned an illustrious reputation. They met all challenges head on, mastering the elements, and responding to every task they were asked to do. Built in a hurry, to cope with an emergency, they are monuments to U.S. technology and skills of this nation's seamen. They are a living legend, and it would be a shame indeed if the last Liberty ship were to be burned apart by the welder's torch, or allowed to slip into a watery grave, without an appropriate memorial to their record.

⚓



The life lines of USNS Marias are replaced as she joins MSC and starts

A New Life

By Louis R. Granger

Like humans, ships are victims of age, suffering hardening of lines and stiffening of valves. However, nearly all life lines of a ship can be replaced. And so it is with USNS Marias, after nearly 30 years of service as a Navy fleet oiler.

Marias is the Military Sealift Command's most recent addition to its fleet support force and will report to the Second Fleet for duty by early summer. She will operate in support of fleet operations wherever required.

She was retired from the commissioned Navy last October and joined the sealift command's fleet to furnish replenishment of petroleum products to Navy ships at sea.

Her master, Walter H. Barkmann, is a retired Navy officer who was assistant chief of staff for MSC, Atlantic from July 1963 to July 1965.

The Marias was drydocked at Baltimore for bottom work and then went to Brooklyn for modification of the crew quarters and general refurbishment. After sea trials she headed for Norfolk where her number two center tank was sandblasted and coated with Savapon epoxy. That tank will hold aviation gasoline and the coating will protect the steel plating as well as the fuel.

A tour of an oiler during overhaul is like walking through a jungle of wire, hoses, and pipes. In fact, part of the ship that contains the cargo transfer valves is known as the "jungle."

The Marias is an old ship facing new challenges. "We realized how old she really was when we got a good look at her insides," said Captain Barkmann in Brooklyn. "She needed more repairs than we first thought, but the hull looked beautiful in drydock and the boilers and service generators are good. The pipes and pumps need work and all the valves are bad. Some we can live with but others we must replace."

The tank deck is known as the "jungle" because of the maze of pipes, valves and deck supports.

"This is quite a challenge, something new, something different," he said. "It's going to be hard work and long hours."

Boatswain Charles G. Burroughs, who went to sea at 16, may be typical of the type of men who sail MSC fleet support ships. He looks at his new job as Captain Barkmann does, "a challenge and something new."

"Most of us have never been on a tanker, but we have to see how things work. I've got on my first pair of dungarees since 1947 and have worked harder on this ship than I have in years. And I feel better for it. But, some of my friends think I'm crazy."

Burroughs enlisted in the Navy in 1940 and joined MSC in January 1947. He is a grandfather and a volunteer fireman for his hometown of Jackson, N.J. A professional seaman like other civilians in the command's fleet, Burroughs takes his fascination and love of ships and the sea ashore. He has built about 250 ship models, mostly sailing vessels, but they include MSC ships he has sailed on, including the Darby, Corpus Christi Bay and Taylor, none of which are now active in the MSC fleet.

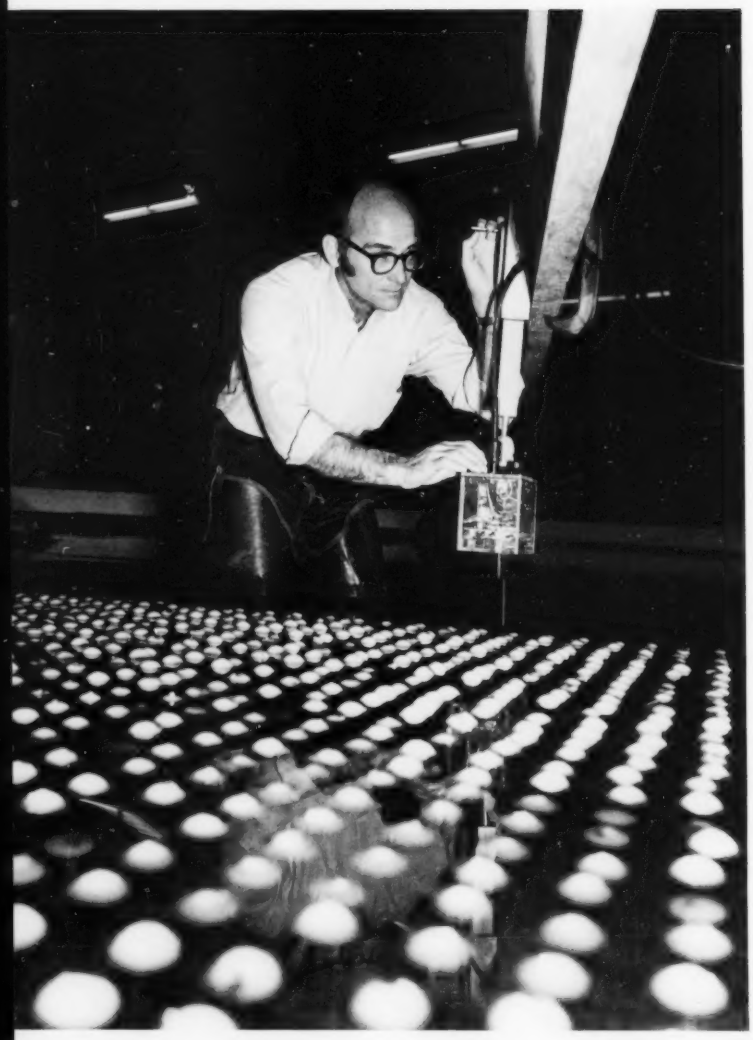
Interviewed while Marias was in Brooklyn, Burrough said he was doing everything from chipping paint to rigging hoses. "She was in pretty bad shape, but looking better now. The paint work was neglected."

The Marias will have 105 civilian seamen and 15 military men who will handle communications. The military department is headed by Lt. Kenneth Tevebaugh, a Naval Academy graduate and a native of Myrtle Beach, S.C.

To Lieutenant Tevebaugh the Marias assignment "is a change, mainly the working conditions. We normally work eight hours and in addition stand watches. We won't be bound by military requirements on the Marias because we're not on a military ship. And the living conditions will be better," he said. "It should be an interesting tour." ⚓

Can something less than a solid concrete wall tame the seas and protect ocean beaches and harbors? Scientists at Scripps Institution think there is.

The Float Breakwater



Richard J. Seymour adjusts wave height measuring instrument at Scripps as part of a study of the system.

By Linda McDaniel

Clusters of five-foot, hollow balls anchored to the ocean floor may be the new thing in breakwaters to protect ocean beaches and harbors from wave damage.

Labeled the tethered float breakwater, the anchored balls may provide more protection and could be cheaper than traditional breakwaters of rocks, piling and concrete.

Devised by John D. Isaacs, a professor at Scripps Institution of Oceanography, it was developed over the past two years by Richard J. Seymour, a graduate student at the La Jolla, Calif. institution.

The system is based on a premise that energy of ocean waves can be drastically reduced by the drag created by patches of ball-shaped floats.

"The spheres reflect some wave energy back into the sea, eliminate some energy by bouncing waves between the spheres, and remove additional wave energy by the frictional drag on the water trying to move past them," Seymour said. He added that the breakwater can reduce 12 foot high waves to about 2 feet as they pass through 25 rows of 50 spheres, placed five feet apart. And "two-foot waves," he said, "any boat can handle."

The breakwater employs five feet in diameter spheres anchored to the ocean floor by cables and floating slightly below the water surface. The balls can be made of any bouyant material that resists salt water corrosion, such as plastic or rubber.

Professor Isaacs said the idea first occurred to him

during World War II while he was engaged in a submarine net engineering project in the Pacific Ocean.

One advantage of the float breakwater is economy. Seymour said the cost of a floating breakwater is much less than that of a conventional breakwater. "The cost of a rock wall is roughly proportional to the square of the water depth in which it is built," he said. Conventional breakwaters are extremely expensive in water depths of 50 feet or more, and beyond depths of 100 feet, it becomes too costly to build them.

Seymour admitted that cost of floating breakwaters would increase with depth of the water, but only by the cost of additional cable needed to anchor the balls on the ocean floor.

Seymour believes in the long-run his system would only cost about 10 per cent of the amount required to build a solid breakwater, plus maintenance.

In addition to relatively low construction cost, another plus for the breakwater is its versatility.

Float breakwaters could be used to create mid-ocean harbors to provide refuge for boats in a storm, or to allow construction of marinas along steep coasts where water is too deep to build rock breakwaters.

Floating breakwaters also could be used as portable jetties to control and reverse beach erosion. They also could be employed as buffers protecting dams and permitting filling of reservoirs that cannot now be filled because of the possibility of wave damage during storms.

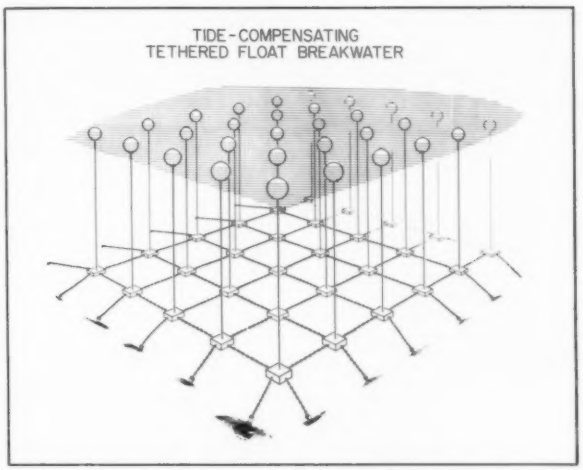
Of interest to military planners is offshore deployment of the wave-busting balls during amphibious landing or ocean operations, or to smooth out water so that sea planes might land.

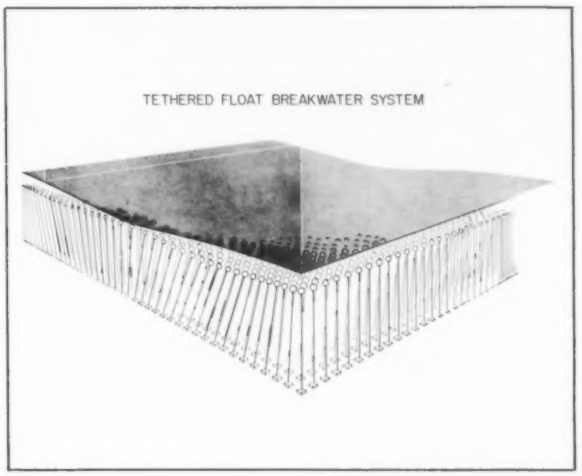
Since the spheres could be air dropped, floating breakwaters could be used around offshore oil blowouts to provide the calm and moorage for a spill confining dam.

In contrast to rigid breakwaters, the floating breakwater would not trap debris, oil or other pollutants.

Research has been funded by the Foundation of Ocean Research and $92,000 from the U.S. Department of Commerce.

Recently, the California Department of Navigation and Ocean Development authorized $500,000 for construction of a prototype breakwater to be installed next fall off the Channel Islands along the California coast. ⚓





C-141 Starlifters ready to load cargo.

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